

IOWA STATE COLLEGE
JOURNAL of SCIENCE

A Quarterly of Research



VOL. 26
1951-1952

PUBLISHED BY
THE IOWA STATE COLLEGE PRESS
PRESS BUILDING
AMES, IOWA

IOWA STATE COLLEGE JOURNAL OF SCIENCE

Published October, January, April, and July

EDITOR-IN-CHIEF R. E. Buchanan
BUSINESS MANAGER Marshall Townsend

Published under the joint auspices of the graduate faculty of Iowa State College and the local chapter of Sigma Xi. The administrative board for the academic year 1951-52 includes:

REPRESENTING THE GRADUATE FACULTY

E. A. Benbrook, Department of Veterinary Pathology; *F. E. Brown*, Department of Chemistry; *E. S. Haber*, Department of Horticulture; *H. M. Harris*, Department of Zoology and Entomology; *R. M. Hixon*, Dean of Graduate College (and Chairman of the Administrative Board); *Frank Kerekes*, Department of Civil Engineering; *P. Mabel Nelson*, Division of Home Economics; *R. W. Orr*, The Library.

REPRESENTING SIGMA XI

D. L. Holl, Department of Mathematics; *C. H. Werkman*, Department of Bacteriology.

Manuscripts should be submitted to R. E. Buchanan, 24 Curtiss Hall, Iowa State College, Ames, Iowa.

All matter pertaining to subscriptions, remittance, etc., should be addressed to the Iowa State College Press, Press Building, Ames, Iowa. Subscriptions are as follows: Annual: \$6.00 (in Canada \$6.50; other foreign countries \$7.00); single copies: \$2.00 (except No. 2 in each volume, beginning with Vol. XXV, \$3.00).

Entered as second-class matter January 16, 1935, at the post office at Ames, Iowa, under the act of March 3, 1879.

Vol. 26, No. 1, October, 1951

Effect of benzene and six selected salicylates on the development of immunity in <i>Trypanosoma lewisi</i> infection and on various aspects of the blood picture.	ELIZABETH A. BARNES	1
The magnetic susceptibility of Vitamin B _{12a} .	HARVEY DIEHL, ROY W. VANDER HAAR, AND ROBERT R. SEALOCK	19
Notes on the digger-bee, <i>Anthophora occidentalis</i> , and its inquilines.	JOHN C. PORTER	23
Some bacteriological aspects of spoilage of self-service meats.	JOHN C. AYRES	31
Marginal rates of substitution and uncertainty in the utilization of feed resources with particular emphasis on forage crops.	EARL O. HEADY AND RUSSELL O. OLSON	49
Spring Dispersal and Settling Activities of Central Iowa Muskrats.	GEORGE SPRUGEL, JR.	71
Juvenile Ring-Necked Pheasant Mortality and Cover Utilization in Iowa, 1949.	EDWARD L. KOZICKY	85
"Reduced" Vascular Bundles in Maize.	JOHN E. SASS	95
The Value of the Degree-Hour Summation System for Estimating Planting Schedules and Harvest Dates With Sweet Corn in Iowa.	E. P. LANA AND E. S. HABER	99
Production of Glycerol by Fermentation.		
I. Fermentation of Dextrose.	L. A. UNDERKOFER, E. I. FULMER, R. J. HICKEY AND T. M. LEES	111
Production of Glycerol by Fermentation.		
II. Fermentation of disaccharides and starch.	L. A. UNDERKOFER, E. I. FULMER, T. M. LEES, AND P. H. FIGARD	135

Vol. 26, No. 2, January, 1952

Abstracts of doctoral dissertations	149
List of masters' theses	327
List of staff member publications	333

Vol. 26, No. 3, April, 1952

Comparative toxicity of the vapors of several chlorinated methane and ethane derivatives to the rice weevil.	CHARLES H. RICHARDSON	357
Effects of hemorrhage, cauterization, ligation, desiccation, and starvation on hemocytes of mealworm larvae (<i>Tenebrio molitor</i> L.)	JACK COLVARD JONES AND OSCAR E. TAUBER	371
Flora of Alaska and adjacent parts of Canada. IX. J. P. ANDERSON		387
Iowa Ascomycetes I. The Xylariaceae.	JOSEPH C. GILMAN AND L. H. TIFFANY	455
Fluctuations in bob-white populations, Decatur County, Iowa. ¹	EDWARD L. KOZICKY AND GEORGE O. HENDRICKSON	483
Age and growth of the black and white crappies, <i>Pomoxis nigromaculatus</i> (LeSueur) and <i>P. annularis</i> Rafinesque, in Clear Lake, Iowa.	JAMES G. ERICKSON	491

Vol. 26, No. 4, July, 1952

The uredinales of Alaska and adjacent parts of Canada.	J. P. ANDERSON	507
Growth studies of the carp, <i>Cyprinus carpio</i> Linnaeus, in Clear Lake, Iowa.	THOMAS S. ENGLISH	527
Controlled waterfowl hunting on a state-owned public shooting ground, Forney Lake, Iowa, 1950.	JAMES G. TEER	541
On the Properties of Vitamin B _{12r} .	HARVEY DIEHL AND RICHARD MURIE	555
Indentation of a semi-infinite medium by an axially symmetric rigid punch.	FREDERICK CHONG	565
A comparison of two methods for the determination of moisture content in heat processed beef.	J. C. BARD, B. OSTLE AND R. G. TISCHER	581
Determination of amino nitrogen in vitamins B ₁₂ and B _{12a}	HARVEY DIEHL AND JOHN I. MORRISON	589
Types of response in individual ducklings and chicks to blood-induced infection with <i>Plasmodium Lophurae</i> .	ELERY R. BECKER	591
Volume Index.		605